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UA prof creates mighty fabric

QuakeWrap can bolster concrete, masonry, steel

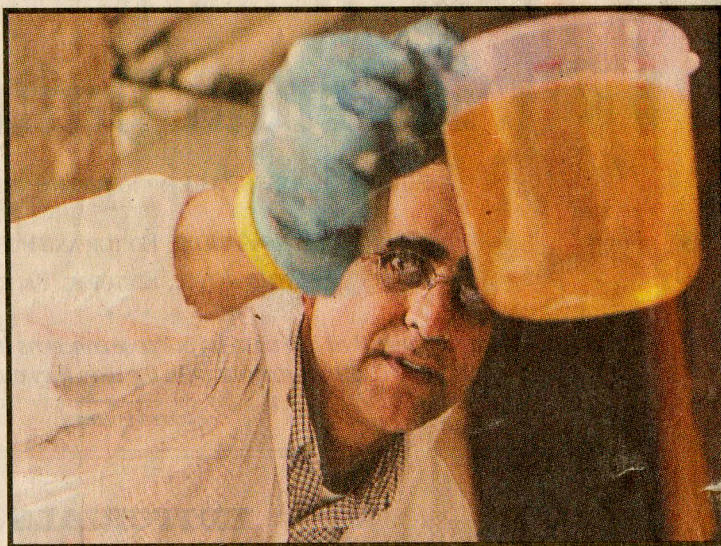
By Marcee McKernan
ARIZONA DAILY STAR

An innovative process developed by a UA professor has helped reinforce second-floor walkways at a South Side school.

Workers applied the material created by civil engineering professor Mo Ehsani at Challenger Middle School, 100 E. Elvira Road, this week.

The three sky bridges, which students use to get from class to class, needed reinforcement on the last 4 feet of each beam directly above the columns to prevent further cracking of the concrete and to ensure the continued safety of the students, said Gene Repola, assistant superintendent in charge of operations and facilities for Sunnyside Unified School District.

There is a lot of shifting that goes on with concrete as a result of the weather, Repola said. The concrete contracts and expands with different temperatures.



Photos by James S. Wood / Arizona Daily Star

UA civil engineering professor Mo Ehsani prepares the epoxy that will saturate the fabric he's developed that's far stronger than steel.

The original design did not leave enough room for this to happen, so the concrete started to crack, said Repola.

Ehsani has developed a fiber composite material as thin as paper, yet strong enough to withstand earthquakes.

"Once the fabric has cured, it will be three or four times stronger than steel," Ehsani said.

While his innovative technology is new to most Tucson engineers, Ehsani celebrated his 10th anniversary this year as president of QuakeWrap Inc., formerly known as External Reinforcement Inc. He changed the name two years ago to match that of his patented QuakeWrap products.

"Our QuakeWrap products include fabrics that are woven

with fine fibers of glass, carbon or Kevlar, and are flexible enough to cut with a pair of scissors," said Ehsani.

Ehsani said the product's flexibility allows the freedom to move it around the contours of a structure. The installation process involves applying a tack coat to the stripped structure and then applying the fabric, which has first been saturated with an epoxy, just like wallpaper, said Ehsani.

Within three to four hours of applying the fabric onto the tack coat, the structure will be 80 to 90 percent reinforced; after 24 hours, the once-fine fabric will be like steel, said Ehsani.

The QuakeWrap can be used on wood, concrete, steel and masonry and a host of other materials, said Ehsani, who added that the material has been used to reinforce the United Airlines Building at Oakland International Airport as well as in the Central Arizona Project aqueduct.

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Ehsani supervises the installation of his QuakeWrap, which is shoring up student walkways at Challenger Middle School.